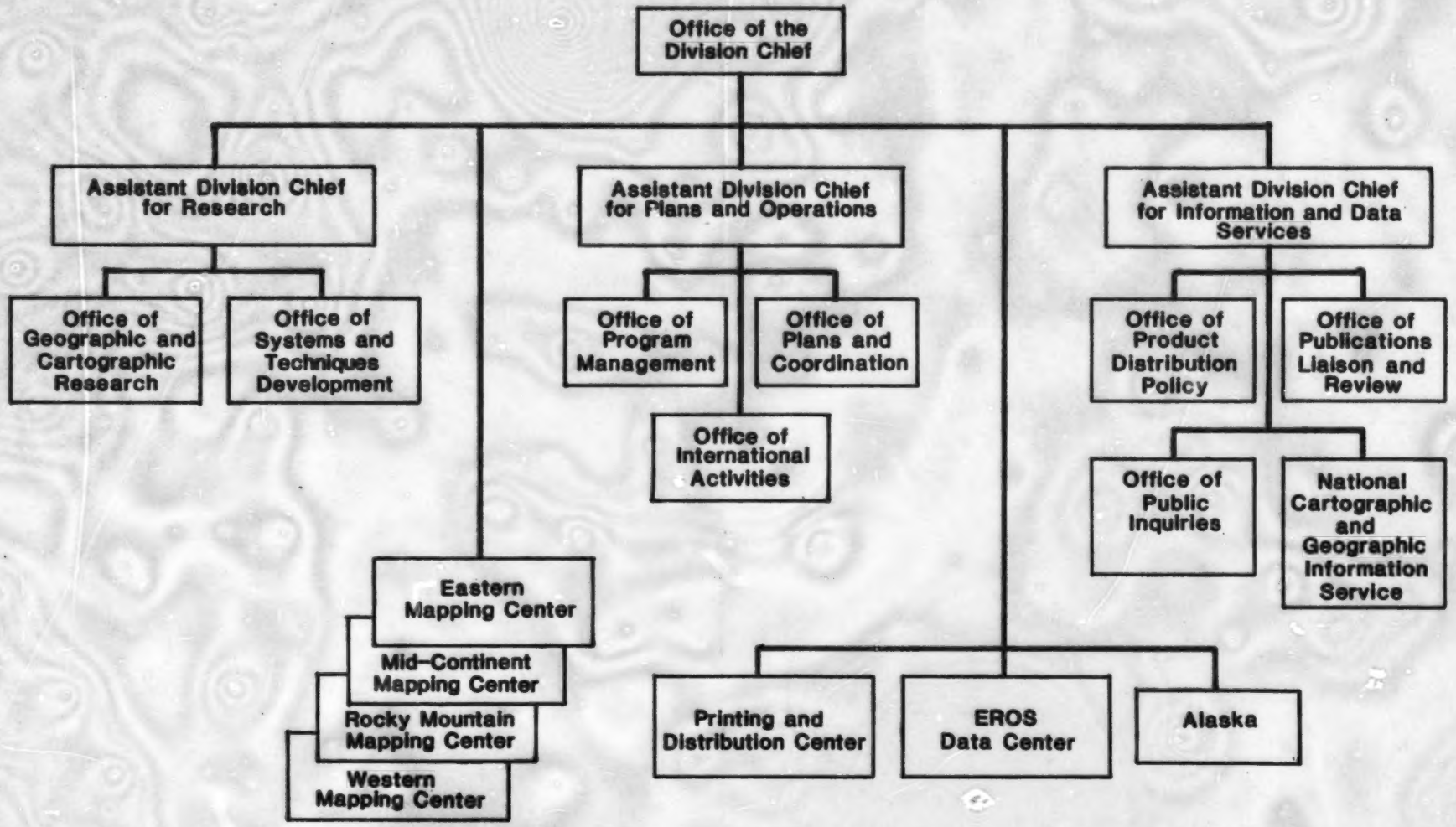
UNITED STATES
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

COORDINATION ACTIVITIES OF THE NATIONAL MAPPING DIVISION USGS Fiscal Year 1983

Open-File Report 84-309

Reston, Virginia
1984

U.S. GEOLOGICAL SURVEY-NATIONAL MAPPING DIVISION


Office of the Division Chief
Assistant Division Chief for Research
Office of Geographic and Cartographic Research
Office of Systems and Techniques Development
Assistant Division Chief for Plans and Operations
Office of Program Management
Office of Plans and Coordination
Office of International Activities
Assistant Division Chief for Information and Data Services
Office of Product Distribution Policy
Office of Publications Liaison and Review
Office of Public Inquiries
National Cartographic and Geographic Information Service
Eastern Mapping Center
Mid-Continent Mapping Center
Rocky Mountain Mapping Center
Western Mapping Center
Printing and Distribution Center
EROS Data Center
Alaska

COORDINATION ACTIVITIES OF THE NATIONAL MAPPING DIVISION
U.S. GEOLOGICAL SURVEY
Fiscal Year 1983

As the principal domestic mapping agency for the United States, the U.S. Geological Survey, National Mapping Division (NMD), is responsible for maintaining the coordinating mechanisms which insure that the national mapping programs and cartographic information responsibilities mandated by OMB Circular A-16 are carried out in the most expeditious and economical manner possible. Since most NMD mapping and cartographic information programs are based on the requirements of Federal, State, and local agencies, coordination mechanisms are vital elements in every major organizational structure within the NMD.

Coordination activities involve participants from the major NMD organizations: Office of the Division Chief, Plans and Operations, Information and Data Services, Research, Earth Resources Observation Systems (EROS) Data Center, Printing and Distribution Center, and the Mapping Centers (see organizational chart). Such coordination activities result in the identification of mapping, remote sensing, and cartographic information requirements from other agencies. These inputs are translated into specific mapping programs or information systems. The resulting products and data sets are then cataloged and distributed to insure their multiple use by the requesting governmental agencies and the general public.

Since the reorganizations of 1980 and 1982, which created the National Mapping Division by combining the Topographic Division, the Geography Program, elements of the Publications Division, and the EROS Program, the new Division has expanded its role in coordination activities. The extent of NMD coordination is sufficiently broad as to preclude the detailing of all of these activities in one report.

The three following sections are intended to alert the audience to major coordination activities between NMD and Federal and State agencies and to highlight special topics and programs. This report will be updated annually to document organizational changes, new coordination initiatives, and any major Division policy changes occurring in the past fiscal year.

I. Coordination Activities for Major National Mapping Division Program Elements

A. Digital Cartography. Coordination for the Digital Cartography Program is conducted by three standing committees. The U.S. Geological Survey Digital Cartography Coordinating Committee, chaired by the NMD, is responsible for interdivision coordination to foster expanded application of digital technology to the Earth sciences.

Publication authorized by the Director, U.S. Geological Survey, on April 5, 1984.

The Interior Digital Cartography Coordinating Committee (IDCCC), chaired by USGS-NMD, is a Department of the Interior interbureau coordinating committee formed under the direction of the Secretary in his memorandum of October 22, 1982. This memorandum delegated responsibility to the USGS for chairing the IDCCC, developing a National Digital Cartographic Data Base (NDCDB) to include base categories of cartographic data, and for serving as the Department's primary producer of digital cartographic data for inclusion into the NDCDB.

The IDCCC is supported by three working groups: Data Production Planning, Applications, and Technology and Data Standards. The latter working group had been active before the IDCCC was established and includes representatives from the U.S. Forest Service and the Soil Conservation Service.

Coordination work of the IDCCC will culminate in semiannual reports to the Secretary addressing the topics of: work plans, resource requirements, agreements, and other information pertinent to the digital cartographic activities of the Department.

The third and most recently formed committee is the Federal Interagency Coordinating Committee on Digital Cartography (FICCDC) established by an April 4, 1983, OMB memorandum. Chaired by the USGS/NMD on behalf of the Department of the Interior and guided by a Steering Committee comprised of representatives from the Departments of Agriculture, Defense, Commerce, State, Energy, Housing and Urban Development, Transportation, the National Aeronautics and Space Administration, and the Federal Emergency Management Agency, the FICCDC coordinates Federal digital cartographic programs through five working groups: Reports, Requirements, Standards, Technology Exchange, and User Applications.

B. Alaska Mapping and Photoimagery Initiatives. Departmental meetings, chaired by the Assistant Secretary for Policy, Budget, and Administration, determined that the major Alaska mapping priorities of the Bureau of Land Management, National Park Service, Fish and Wildlife Service, and Bureau of Indian Affairs, in regard to the Alaska National Interest Lands Conservation Act (ANILCA, Public Law 96487 of 1980), are: orthophotos and orthophotoquads; revised 1:63,360- and 1:250,000-scale topographic maps; and land use/land cover mapping in support of the Federal/State Land Use Council established by ANILCA. Other Federal agencies such as the Defense Mapping Agency and U.S. Forest Service, State agencies, and USGS Divisions have similar mapping requirements in Alaska.

The orthophotoquad program, 1:63,360-scale orthophotoquads, supports Bureau of Land Management public land surveys, the Alaska Native Claims Act, and State land conveyance activities. The National Mapping Division is updating 90 maps at the 1:250,000 scale specifically requested by the National Park Service and Fish and Wildlife Service.

The Alaska High-Altitude Photography Program, a continuing interagency photocoverage program started in 1978, was renewed in 1983. The photographs, 1:120,000-scale black-and-white and 1:60,000-scale color-infrared, acquired for the cooperating agencies under contract with the National Aeronautics and Space Administration is being used by NMD for orthophoto production and 1:250,000-scale map revision, as well as for revision of the 1:63,360-scale quadrangle maps. About 90 percent of the State is covered by recent high-altitude photography. Currently, there is no coverage for the Aleutian Islands.

A Memorandum of Understanding was developed and signed between NMD and the Alaska Department of Natural Resources in August 1981 for the joint funding of 1:63,360-scale orthophotoquad production and vegetation/land use mapping and digital data pilot projects. The two pilot projects will potentially satisfy the requirements of many State and Federal agencies having land management responsibilities in Alaska.

In FY 1983, NMD entered its second year of a continuing cooperative agreement with the State of Alaska for 1:63,360-scale orthophotoquad coverage for most portions of the State over the next decade. Scheduling and preparation of these products were coordinated with the Bureau of Land Management, Forest Service, National Ocean Service, and Soil Conservation Service to best serve multiagency requirements.

Since 1980, Landsat-derived land cover products of about 100 million acres in Alaska have been prepared by NMD. In FY 1983, land cover mapping projects included about 30 million acres. These map products are meeting the requirements of the Bureau of Land Management, Forest Service, and Fish and Wildlife Service. A current effort involves creating Landsat digital classification standards for the land cover products.

C. National High-Altitude Photography (NHAP) Program . The NMD has the lead coordination role in a Federal multiagency activity to establish a national high-altitude photographic data base. Since 1980, 15 Federal agencies have pooled their resources and consolidated photographic requirements in a systematic 6-year effort that will minimize duplication of photographic programs, reduce overall Federal expenditures for aerial photography, and provide imagery for a wide range of public and private users.

To date, 1:80,000-scale black-and-white and 1:58,000-scale color-infrared stereoscopic images have been acquired for about 50 percent of the 3 million square miles in the conterminous United States. An additional 40 percent of the 48-State area is under contract to private aerial survey firms, and the final contract to complete the once-over coverage will be awarded early in FY 1985. Extensive use has been made of the newly established data base for mapping, landform studies, land use planning, natural resource inventory, evaluation and management, engineering, and education.

In anticipation of the completion of once-over coverage, the participating agencies have begun to define the requirements for a

maintenance program which would provide cyclic coverage of the conterminous United States and imagery for specific agency needs. Although continued funding at the same level is not assured, under consideration are requirements for new cameras, films, and other remote sensors, photographic parameters, and extension of program coverage to Alaska, Hawaii, and outlying areas. In addition, new applications of the data base to prepare map and cartographic data products are being investigated. Major decisions must be made soon if some level of second coverage is to begin in 1986.

D. State Jointly Funded Mapping Programs. Aside from Federal agencies, States are the next most visible users of NMD products. Given the continuing willingness of State agencies to provide joint funding, State requirements for topographic and thematic maps, photoimagery products, and increasingly for digital data, constitute a key element in most NMD planning processes and operational programs. Most State joint funding programs are initiated by the four Mapping Centers through contacts with the State Mapping Advisory Committees or individual State agencies. Initially, specific mapping requirements and available funding support are identified. This information is conveyed to NMD Headquarters for Division review and approval. Once the State requirements are incorporated into the Division planning process, the funds are managed by the Office of Program Management (Plans and Operations). The Mapping Centers are then responsible for compiling the maps and maintaining liaison with the appropriate State agencies. In addition, NMD provides in-State coordination to State and Federal agencies through a jointly funded State Resident Cartographer activity in Hawaii (including the Trust Territories of the Pacific Islands), Idaho, Nevada, Oregon, and Washington.

In FY 1983, NMD was involved in jointly funded mapping programs with 39 States. Specific program elements included: primary quadrangle (7.5-minute) mapping--22 States; map revision (7.5-minute)--24 States; intermediate-scale mapping--4 States; orthophotoquads--5 States; land use/land cover maps or digital data--3 States; and other small-scale and special maps--2 States.

II. Recent Interagency Coordination Activities and Conferences

A. Annual OMB Circular A-16 Solicitation. In January 1983, NMD invited 30 Federal agencies to identify and prioritize their requirements for new mapping, photoimage products, digital data, and revisions. Information received through this process was conveyed to the NMD program planners and managers for use in program development.

As a follow-on to the A-16 solicitation, a series of meetings was held with the Soil Conservation Service to clarify its immediate and long-term mapping requirements. Orthophotoquad coverage for 251 counties will be needed over the next 8 years. Slope maps derived from digital elevation data obtained from the orthophoto process were requested to expedite field operations. Currently no capacity exists in NMD to provide slope map products. Replacement of older and cosmetically

inferior orthophotoquads was also identified as needed. Due to funding constraints, orthophotoquads and derivative products are prepared only on a cost-share or full-repay basis, limiting NMD's ability to respond to Soil Conservation Service requirements.

B. Exclusive Economic Zone (EEZ). Responding to the Presidential Proclamation of March 10, 1983, which established U.S. jurisdiction out to 200 nautical miles from the U.S. coast, NMD, in cooperation with the National Ocean Service, prepared a series of six maps at 1:10,000,000 scale showing bathymetry and boundaries of this Exclusive Economic Zone. These maps are digitally derived products that will support energy and mineral resource studies of the nearly 4 billion acres of relatively unexplored ocean bottom areas comprising the zone. This area is about twice the size of the onshore area of the U.S.

C. USGS/Federal Bureau of Investigation (FBI). Under a reimbursable agreement, the National Mapping Division is preparing a series of 24 1:4,800-scale orthophotos in California. The orthophotos will be completed by May 1984.

D. USGS/U.S. Customs Service and International Boundary and Water Commissions. The Direccion General de Geografia and the USGS are continuing to acquire 1:80,000-scale color-infrared aerial photographs along the Mexican-U.S. border at the request of the U.S. Customs Service and the International Boundary and Water Commission. The finished product will be a series of 215 border-centered, simulated-natural color, 1:25,000-scale photoimage maps. The International Boundary and Water Commissions of both countries plan to use the base maps, with slight modifications, to meet their legislated requirement to update border maps every 10 years. At the present time, approximately 75 percent of the photography has been obtained, and 35 border-centered photoimage maps have been printed.

In addition, NMD coordinated a proposal made by the U.S. Commission of the International Boundary Commission (U.S./Canada) and the U.S. Customs Service to provide a series of natural color orthophotoquads of the U.S./Canada border to replace outdated maps. As proposed by the U.S. Commission the orthophotoquads would be 1:24,000-scale, border-centered photoimage maps.

E. Coastal Barrier Task Force. The NMD worked extensively with the Fish and Wildlife Service and National Park Service to conclude its mapping responsibilities in support of the Department of the Interior Coastal Barriers Task Force. The Task Force was formed in response to the Omnibus Budget Reconciliation Act of 1981 and was created to identify undeveloped coastal barriers, or portions thereof, along the Atlantic and gulf coasts, and to examine the economic and environmental issues involved in land development on these coastal barriers. NMD was responsible for (1) coordinating the production of base maps for approximately 200 barrier system units, (2) generating measurements for the mapped areas, (3) distributing the maps to more than 900 Federal, State, congressional, and private offices, and (4) storing and

reproducing coastal barriers photography. Data developed by the Task Force were used by Congress to support passage of the Coastal Barrier Resources Act of 1982, for which the Task Force continues to retain full responsibility for the preparation of a report which is slated to go to Congress by October 1987.

F. USGS/Bureau of Land Management Coordination. The USGS entered into six Memoranda of Understanding in FY 1983 based on specific proposals presented to the USGS (NMD)/BLM Mapping Coordination Committee meeting in FY 1982. These included: (1) the production, storage, and distribution of products of the National Mapping Program to streamline data handling responsibilities between the two bureaus; (2) the NHAP Program, to help coordinate program requirements and pool resources to obtain high-altitude photography of the conterminous United States; (3) the storage, reproduction, and distribution of aerial photography to make BLM film and film products readily available to the public and other users; (4) the establishment of certain specified horizontal control stations in the State of Alaska to increase efficiencies in field survey operations through a joint agency work plan; (5) the exchange of cartographic and cadastral information to formalize interagency cooperation and clarify responsibilities and dissemination of such data to users; and (6) the collection and exchange of public land survey system digital data to save cost in the one-time generation of mutually needed data.

In FY 1983, NMD delivered 25 1:250,000-scale Landsat 3 image maps of the north slope of Alaska (area north of the 68th parallel) under a repay agreement with the Minerals Management Service (MMS). The products are to support the MMS energy and minerals on-shore program which has since been transferred to BLM. Return beam vidicon data were used to prepare 14 quadrangles and multispectral scanner images were used for the remaining quads.

G. USGS/NOAA Interagency Committee for Program Coordination. This inter-bureau group maintains periodic liaison to coordinate a variety of mapping and environmental programs. The most recent meeting was held on September 30, 1983. Subcommittee reports involving NMD included Mapping, Charting, and Geodesy, dealing with (1) a cooperatively funded effort to complete the readjustment of the Alaska Horizontal Control Network, and (2) an announcement that USGS was identified by OMB as the lead agency for "coordination of Federal Digital Cartographic Data Programs;" and Earth Observations from Space, identifying problems with Landsat D, increase in Thematic Mapper scenes, and prices of Landsat products.

H. USGS/Office of Surface Mining Interagency Committee for Program Coordination. The most recent meeting of this interagency committee was on May 11, 1983. As a result of current organizational structure, it was agreed to review the interagency Memorandum of Understanding and revise as appropriate. It was also agreed to review and revise the charter for Subcommittee on Mapping and Remote Sensing to provide a full range of relationships between the two agencies regarding

topographic mapping, digital cartography, remote sensing, and land use and land cover mapping. Other activities of the subcommittee included the preparation of an information paper discussing mapping in support of Office of Surface Mining activities. The effective use of various NMD program/products including digital cartographic data was highlighted.

I. USGS/Soil Conservation Service Coordination Committee. Quarterly meetings are held to discuss mapping and photoimage programs of mutual interest. The most recent meeting held on September 15, 1983, identified a subcommittee activity to (1) review existing Memoranda of Understanding between the agencies to determine if revision of any is necessary, (2) review the cartographic recommendations of the Grace Commission Study, (3) identify mapping needs of the Soil Conservation Service and determine the capability of the NMD to respond to those needs, and (4) consider a joint agency testing program to evaluate various camera platforms and film emulsions in support of a maintenance NHAP Program. Other issues discussed included the status of joint agency mapping programs, status of NHAP, and the 1:100,000-scale digital mapping effort for the U.S. Census Bureau. Items discussed at previous meetings in FY 1983 included Soil Conservation Service's 1983 OMB Circular A-16 requests for complete coverage of the conterminous U.S. with orthophotoquads and digital elevation model data by 1990, and digitized public land survey data of all 30 public land survey system States by 1985. These were viewed as significant requests which involved a high percentage of NMD's resources and would be limited by currently available funds.

J. USGS/Trust Territory of the Pacific Islands (TTPI) Coordination. In response to an existing Memorandum of Understanding between the two agencies a series of 55 1:10,000-scale maps prepared for the TTPI were delivered in FY 1983. Derived products include 17 1:25,000-scale topographic maps currently in work. Under the mandate of the Trusteeship Council of the United Nations, the USGS/NMD continued to provide cartographic assistance to the TTPI during FY 1983. The appointment in FY 1983 of an NMD Pacific Resident Cartographer, residing in the Water Resources Division District Office in Hawaii, will provide Pacific Basin coordination for mapping requirements and technical assistance to Federal, State, and TTPI agencies.

K. USGS/Federal Interagency Coordinating Committee on Digital Cartography (FICCDC). The committee held its first meeting on May 27, 1983. The formation of the committee was in response to an OMB directive of April 4, 1983, based on its study of duplicative Federal computer mapping programs. The committee, chaired by NMD, was represented by 23 Federal agencies. A steering committee and five work groups make up the framework of the committee. The work groups include Reports, Requirements, Standards, Technology Exchange, and User Applications. The goal of the FICCDC is the development, promulgation, and acceptance of standards for digital cartographic data production for the user community (not only Federal users, but also State, local, and private users as well). To achieve these goals the FICCDC will develop a

systematic approach to reduce duplication and eliminate waste within Federal digital cartographic activities, improve communication throughout government agencies concerning digital cartographic activities, and determine needed coordination mechanisms to insure future compliance with the stated goals of the FICCDC.

L. USGS/Interior Digital Cartography Coordinating Committee (IDCCC). The IDCCC is an interbureau committee established at the request of the Secretary in his memorandum of October 22, 1982, that assigned to the U.S. Geological Survey the responsibility of organizing and chairing the IDCCC. The eighth and most recent meeting of the committee was held on September 13, 1983. Several issues were discussed including (1) data standards and the distribution of Chapter E of the USGS Standards, "Land Use and Land Cover Data Standards," (2) the Federal Mineral Land Information System (FMLIS) - FY 1984 and planning that highlighted a working agreement between USGS and Bureau of Mines to jointly participate on the next pilot project along with Forest Service and Bureau of Land Management, (3) the Map Overlay and Statistical System (MOSS), which was the subject of a national users workshop, and (4) improvement of interbureau communications about IDCCC activities. The committee prepared and distributed its first report on spatial data activities to the Secretary of the Interior. The purpose of the report was to advise the Secretary on the scope of digital cartography activities in the Department, and to make recommendations for improving the effectiveness and economy of all Department of the Interior digital cartographic data programs.

M. USGS/Federal Geodetic Control Committee (FGCC). Ten Federal Departments and independent agencies meet annually as part of the OMB Circular A-16 solicitation procedure to coordinate geodetic control requirements and plans and to review current geodetic activities.

As a participating member, the USGS met in committee on March 29, 1983, to review coordination activities for geodetic control, particularly in the State of Alaska. During FY 1983 an agreement was reached among NMD, Bureau of Land Management, Bureau of Indian Affairs, and the State of Alaska to contribute funds to the National Ocean Service, which will expedite the adjustment of the horizontal control network in the State. This effort is expected to be completed in early FY 1984, and will assist in the Division's mapping program in Alaska.

N. USGS/Bureau of the Census Interagency Technical Coordination Task Force. The Bureau of the Census requires digital line graph data to support its Topological Integrated Geographic Encoding and Referencing (TIGER) system for the 1990 Decennial Census. The digitized line graph data include transportation networks, hydrography, selected power transmission lines, and surface pipelines from the USGS 1:100,000-scale quadrangle maps of the conterminous U.S. In FY 1983 NMD began, as a pilot project, the digitizing of 48 1:100,000-scale quads covering the State of Florida to develop procedures and specifications for a nationwide production effort. Completion of the cartographic data base is needed by mid FY 1987. This requires expediting the completion of

the planimetric bases for the remaining 1:100,000-scale maps. Reduced funding for the intermediate-scale mapping program could jeopardize meeting the 1987 Census Bureau requirement.

O. USGS/Defense Mapping Agency Coordination. A Memorandum of Understanding was signed with the Defense Mapping Agency for a Joint Investigation and Assessment of Automated Cartographic Capability to provide the mechanism to identify within the contract market, capabilities to support auto-cartographic production and, if mutually agreed, pursue the award of contract for digitizing 1:24,000-scale topographic line maps to produce 1:50,000-scale topographic line maps. Sixteen 1:24,000-scale maps were selected in the initial pilot effort. Several hundred 1:24,000-scale maps per year are anticipated as an on-going production effort. An additional Memorandum of Understanding provided for the preparation of 1:50,000-scale maps by conventional methods. A joint meeting concerning the Alaska Geodetic Control Project identified specific software development needs to assist in the processing of geodetic control data.

P. USGS/U.S. Forest Service Coordination. The U.S. Forest Service maintains a Primary Map Series to assist in its management of National Forest lands. To avoid overlap between the Forest Service and the National Mapping Programs and thereby achieve cost savings in map revision operations, a Mapping Task Force was formed in FY 1982. The task force sought to review each agency's mapping operations and develop a mechanism whereby jointly funded map revision would be carried out by a USGS/NMD production unit dedicated to Forest Service requirements. In FY 1983, a Memorandum of Understanding was signed that provided a cost-share 7.5-minute map revision program. Technical meetings were held to resolve procedural differences and to develop mutually agreeable specifications. During FY 1983 165 maps were revised under this program. About 300 maps will be added to this program annually.

Q. USGS/National Park Service Coordination. An interagency agreement on the Acid Rain Materials Inventory Project between the National Park Service and the USGS was signed in FY 1983. The agreement formalizes a joint effort to estimate the amount, kind, and location of exterior construction materials used in the built-up environment in the U.S. Participation by the USGS will include providing digital land use data, areal statistics, and related census data from the Land Use/Land Cover Program; applying construction material coefficients to the digital data base; and developing spatial sampling designs. The National Park Service will fund the USGS tasks outlined in the statement of work.

A second interagency agreement between the National Park Service and the USGS was signed in February 1983, providing cooperatively produced topographic maps of National Park units. Subject to available funds, the joint agreement provides for about three National Park Service maps per year based on a 50-percent cost-share effort not to exceed $75,000 for each party. This effort begins FY 1984.

R. Federal Mineral Land Information System (FMLIS) Initiatives. In 1983 the National Mapping Division in coordination with the Geologic Division, initiated a Federal Mineral Land Information System (FMLIS). FMLIS is designed to provide managers and policymakers with information on Federal surface ownership, subsurface mineral rights, restrictions to mineral development, and known mineral occurrence and potential through a geographic information system. Such a system can be used to provide answers relating to mineral availability and development on public lands.

During 1983 a pilot project was conducted on the Medford, Oregon, 1:250,000-scale quadrangle map sheet. The overall objective of this pilot project was to demonstrate the concept of FMLIS and illustrate the types of questions which could be answered with the data base. While the pilot project has been judged a success, there is a need for more system development. Also, questions relating to data input procedures, analysis techniques, and data output need answers before FMLIS can be considered an operational, production system.

Other participating agencies in the FMLIS include Bureau of Land Management, Bureau of Mines, and Forest Service. These agencies will be involved in a second pilot project planned for the Silver City, New Mexico/Arizona, 1:250,000-scale quadrangle map in FY 1984. Data production is also planned to begin in the State of Alaska focusing on regional analyses.

S. National High-Altitude Photography Program. The annual interagency NHAP Program Conference, attended by representatives of 10 Federal bureaus, was hosted March 21, 1983, by NMD. The NHAP Program is intended to provide cyclic photocoverage of the conterminous States. Photocoverage priorities of the attending agencies, solicited earlier by the NMD Office of Plans and Coordination, were presented and discussed. The status of the photocoverage contracts as well as cost projections for the FY 1984 program were reviewed. Preliminary funding commitments from the attending agencies were received and a tentative FY 1984 program was formulated. Following subsequent meetings of the NHAP Steering Committee and other contacts with cooperating agencies, formal bidding solicitations for the FY 1984 NHAP Program were offered to private aerial photography contractors.

III. Major Coordination Responsibilities of the Principal NMD Elements

All NMD mapping coordination is aimed at fulfilling the Division's national mapping responsibilities, and is conducted subject to the approval of the Chief, NMD. Coordination activities occur both at the Division level (Office of the Chief, NMD) and through the offices of the Assistant Division Chiefs for Plans and Operations, Research, Information and Data Services, and through the Offices of the Mapping Center Chiefs, Printing and Distribution Center, and the EROS Data Center (see organizational chart). Within these Division elements, more specialized coordination functions are delegated to component offices and branches. The intent of this system is to have specific

coordination responsibilities assigned to particular NMD elements within a clear chain of command in order to minimize duplication of effort and to expedite the transfer of information to map users and cooperators. The main coordination functions of the various NMD elements are detailed in the following subsections.

A. Office of the Chief, National Mapping Division. This office is the focal point for participation on interagency and interbureau coordination committees dealing with key cooperator agencies. Some of these committees include: USGS/Bureau of Land Management Coordination Committee; USGS/Soil Conservation Service Coordination Committee; USGS/National Oceanic and Atmospheric Administration Program Coordination Committee; USGS/Defense Mapping Agency Coordination Committee; USGS/Office of Surface Mining Subcommittee on Mapping and Remote Sensing; Digital Mapping Policy Committee; Interagency Agreement Related to Classifications and Inventories of Natural Resources; National High-Altitude Photography Program Steering Committee; Interior Digital Cartography Coordinating Committee; and the Federal Interagency Coordinating Committee on Digital Cartography. Through the Office of the Division Chief, liaison is also maintained with other major Federal agencies, such as U.S. Forest Service, for which there is presently no formal coordination group at the agency or bureau level. Committee or other contact representatives may be chosen by the Division Chief from any of the NMD organizational elements. The NMD representative is responsible for maintaining regular contacts and arranging periodic meetings with the appropriate agency, and for insuring that other Division elements are involved in regard to their areas of responsibility. The Division level coordination mechanism impacts most of the larger NMD operational mapping programs.

The NMD has created a position at departmental headquarters to increase presence at the Department and accessibility to other Federal agencies and the Congress. The National Mapping Liaison Officer establishes a day-to-day working relationship with the senior program and planning staff of the Department of the Interior bureaus. In addition this individual establishes and maintains information-exchange relationships with senior liaison program and planning staff of other Federal agencies involved in the development and (or) use of cartographic and geographic information. This individual facilitates outreach and enhances visibility for NMD programs and information products, both inside and outside the Federal Government.

B. Assistant Division Chief for Plans and Operations (P&O). This office is responsible for the planning, budgeting, programing, and coordination of the Division's programs. P&O personnel solicit and analyze program requirements from Federal, State, and other agencies; develop intermediate- and long-range plans for NMD mapping programs; initiate and participate in mapping coordination meetings with other Federal agencies; formulate the Division's budget; develop, authorize, and monitor mapping projects; analyze and report on program accomplishments and product status; manage Division funds obtained through Congressional appropriations or interagency agreements and

cooperatives; manage all Division contract activities related to procurement of aerial photographs, map production, and map printing; coordinate NMD surveying, mapping, geographic, and digital cartographic activities with foreign governments and international organizations; and manage the Antarctica mapping program in support of the National Science Foundation. These duties are performed by three offices which report to the Assistant Division Chief for Plans and Operations. They are the Office of Plans and Coordination, the Office of Program Management, and the Office of International Activities.

C. Assistant Division Chief for Research. This office is responsible for coordination related to the research and development of improved photogrammetric, cartographic, and digital data handling techniques for application to NMD operational programs; transfer of new techniques to cooperator agencies in support of their mapping, information, and resource management requirements; formulation and application of technical specifications and procedures to NMD mapping programs and cartographic and geographic information systems; and encouragement of Government-wide standardization of cartographic and geographic data bases.

Research personnel participate in interagency coordination meetings, research projects aimed at multiple-use mapping and data applications, and a variety of technology transfer activities. Coordination is accomplished through two offices which report to the Assistant Division Chief for Research: the Office of Geographic and Cartographic Research and the Office of Systems and Techniques Development.

D. Assistant Division Chief for Information and Data Services (IDS). This office is responsible for coordination activities concerning operation of the Division's information product distribution systems; development of user assistance mechanisms for cartographic and geographic data bases; conducting of marketing studies and the formulation of pricing and distribution policy; providing technical assistance in the publication of manuscripts, technical standards, user guides, indexes, and other published materials; implementing the Division's exhibits program; and maintaining liaison with the Division, Bureau, Department, GPO, Federal and State agencies, and commercial printers regarding USGS publications.

IDS personnel also participate in major NMD mapping coordination meetings with other agencies. Coordination of information and distribution functions are carried out by five offices, which report to the Assistant Division Chief for Information and Data Services: the National Cartographic and Geographic Information Service, Office of Public Inquiries, Product Distribution Policy Office, Publications Liaison and Review Office, and the Technical Assistance Facility.

E. The EROS Data Center (EDC). The EROS Data Center, located near Sioux Falls, South Dakota, functions as (a) a repository for remotely sensed data acquired from aircraft and spacecraft by USGS, the National Aeronautics and Space Administration, and the National Oceanic and

Atmospheric Administration; and (b) a facility for promoting the use of digital data bases and remote sensing technology through training programs and cooperative projects with Federal, State, and foreign government agencies. The Data Center, under an agreement with National Oceanic and Atmospheric Administration, performs services related to Landsat data processing, archiving, and dissemination. Coordination of activities with the network of foreign Landsat receiving stations is accomplished through participation in the Landsat Ground Station Operators Working Group (LGSOWG) and its Data Distribution and Landsat Technical Working Groups.

During 1983, EDC assumed the lead in directing the EROS interbureau mission for developing and demonstrating applications of remotely sensed and other digital Earth science data sets. The EDC cooperates with Divisions of the USGS and other Department of the Interior bureaus to develop and test methodologies for supporting the Department's responsibilities. EDC also conducts research in hardware and software development for merging and manipulating disparate types of digital data and for digital image processing.

EDC has represented the Department on the Source Evaluation Board for Civil Space Remote Sensing. This Board is acting under direction from the Secretary of Commerce to develop a request for proposal to transfer the operational civil weather (geostationary and polar) and land remote sensing satellites (Landsat) to the private sector. Issues of particular concern to the Department include continuity of data, nondiscriminatory and open dissemination of data to all users, and maintenance of archives so that data will continue to be available for departmental programs.

F. Printing and Distribution Center. This center is responsible for printing and reproduction of USGS maps; maintenance of warehouse stocks; over-the-counter and mail-order sales of maps and books to other Federal agencies and the private sector; administration of automatic mailings to other USGS offices, Federal and State cooperators, and depository libraries; and distribution of products to Public Inquiries Offices and other sales outlets, including a national network of 3,000 map sales dealers. The Printing and Distribution Center administers the Survey's map dealer program and develops other programs, such as the Educational Program and the Boy Scout programs to increase public awareness and revenues through map sales. Because the Center deals directly with map requestors and dealers, it serves as a source of public feedback concerning map printing and availability.

G. Field Mapping Centers. Four regional Mapping Centers are maintained by NMD: Eastern Mapping Center in Reston, Virginia; Mid-Continent Mapping Center in Rolla, Missouri; Rocky Mountain Mapping Center in Denver, Colorado; and Western Mapping Center in Menlo Park, California. Each center is responsible for coordinating NMD programs with the States, regional Federal offices, and other cooperator and user groups within its operating region. To this end, the Mapping Centers carry out requirements, planning, program management, and research activities at

the State, regional, and local level. The centers are also responsible for monitoring the activities of National Cartograpic and Geographic Information Service affiliates within their operating regions, for establishing new affiliate offices, and for training affiliate personnel in data handling techniques.